II. AMENDMENTS TO THE CLAIMS

The following listing replaces any and all prior listings of the claims:

1. (Previously presented) A computer-implemented security system for securing an electronic version of a nucleotide chain sequence, wherein the nucleotide chain sequence comprises at least a portion of a genome of an organism, the system comprising:

a computer hardware apparatus; and

a computer program that, when loaded and executed, controls the computer hardware apparatus such that it carries out:

on a first application,

identifying a sequence of at least one exon and a sequence of at least one intron in the nucleotide chain sequence;

selectively encrypting the sequence of only the at least one exon identified in the nucleotide chain to provide security over a network, wherein the selectively encrypting only the sequence of the at least one exon utilizes cipher block chain encrypting;

outputting the electronic version of the nucleotide chain sequence, including both the encrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron,

wherein the outputting includes transmitting the encrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron; and

on a second application,

receiving the encrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron;

decrypting the encrypted sequence of the at least one exon; and

regenerating the nucleotide chain from the decrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron to re-form the original nucleotide chain sequence.

2. (Cancelled)

3. (Previously presented) The computer-implemented security system of claim 1, wherein the transmitting includes packaging the encrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron into at least one XML document.

4. (Previously presented) The computer-implemented security system of claim 1, wherein the transmitting of the encrypted sequence of the at least one exon and the sequence of the at least one unencrypted intron utilizes web services.

5-6. (Cancelled)

7. (Previously presented) The computer-implemented security system of claim 1, wherein the receiving comprises receiving the encrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron into a bioinformatics database for receiving nucleotide chain queries.

8. (Currently amended) A computer implemented method for transmitting a nucleotide chain sequence, wherein the nucleotide chain sequence comprises at least a portion of a genome of an organism, the method comprising:

on a computer hardware apparatus,

    identifying a sequence of at least one exon and a sequence of at least one intron in the nucleotide chain sequence;

    selectively encrypting the sequence of only the at least one exon identified in the nucleotide chain, wherein the selectively encrypting only the sequence of the at least one exon utilizes cipher block chain encrypting;

    transmitting the encrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron;

    receiving the encrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron;

    decrypting the encrypted sequence of the at least one exon;

regenerating the nucleotide chain sequence from the decrypted sequence of the at least one exon and unencrypted sequence of the at least one intron to re-form the original nucleotide chain sequence; and

outputting the regenerated nucleotide chain sequence.

9. (Canceled)

10. (Previously presented) The method of claim 8, comprising the further step of querying a bioinformatics database with the received nucleotide chain sequence.

11. (Previously presented) The method of claim 8, wherein the encrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron are transmitted in at least one XML document.

12. (Previously presented) The method of claim 8, wherein the encrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron are transmitted using web services.

13. (Cancelled)

14. (Currently amended) A program product stored on a recordable medium comprising instructions executable by a computer system that when executed, cause the computer system to implement a method ~~for~~ encoding a nucleotide chain sequence, wherein the nucleotide chain sequence comprises at least a portion of a genome of an organism, the method ~~program product~~ comprising:

means for identifying a sequence of at least one exon and a sequence of at least one intron in the nucleotide chain sequence;

means for selectively encrypting only the sequence of the at least one exon identified in the nucleotide chain sequence to provide security over a network, wherein the selectively encrypting includes utilizing cipher block chain encrypting; and

means for outputting the nucleotide chain sequence including both the encrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron over the network,

the means for outputting including means for transmitting the encrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron;

means for receiving the encrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron;

means for decrypting the encrypted sequence of the at least one exon; and

~~means for~~ regenerating the nucleotide chain from the decrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron to re-form the original nucleotide chain sequence.

15. (Previously presented) The program product of claim 14, wherein the encrypted sequence of the at least one exon and unencrypted sequence of the at least one intron are stored in at least one XML document.

16. (Cancelled)

17. (Currently amended) A program product stored on a recordable medium <u>comprising instructions executable by a computer system that when executed, cause the computer system to implement a method</u> for decrypting an encrypted nucleotide chain, wherein the nucleotide chain sequence comprises at least a portion of a genome of an organism, the method comprising:

    ~~means for~~ identifying an encrypted sequence of at least one exon and an unencrypted sequence of at least one intron in the nucleotide chain sequence;

    ~~means for~~ selectively decrypting only the encrypted sequence of the at least one exon identified in the nucleotide chain sequence, wherein the sequence of the at least one exon is encrypted using cipher block chain encryption;

    ~~means for~~ reassembling the sequence of the at least one exon and the sequence of the at least one intron to generate a decrypted nucleotide chain sequence; and

~~means for~~ outputting the decrypted nucleotide chain sequence.

18. (Previously presented) The program product of claim 17, wherein the sequence of the at least one exon and the sequence of the at least one intron are stored in at least one XML document.

19. (Cancelled)

20. (Currently amended) The program product of claim 17, further comprising ~~means for~~ querying a bioinformatics database with the decrypted nucleotide chain sequence.

21. (Previously added)   The computer-implemented security system of claim 3, wherein the packaging occurs prior to selectively encrypting the sequence of only the at least one exon identified in the nucleotide chain.

22. (Previously added)   The computer-implemented security system of claim 3, wherein the packaging includes packaging the sequence of the at least one exon in a first unique XML document and packaging the sequence of the at least one intron in a second unique XML document.

23. (Previously added)   The method of claim 11, wherein the encrypted sequence of the at least one exon and the unencrypted sequence of the at least one intron are packaged into the at least one XML document prior to selectively encrypting the sequence of only the at least one exon identified in the nucleotide chain.